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Bibliography of Fusion Product Physics in Tokamaks

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BIBLIOGRAPHY OF FUSION PRODUCT PHYSICS IN TOKAMAKS

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ABSTRACT

Almost 700 citations have been compiled as the first step in reviewing the recent research on tokamak fusion product effects in tokamaks. The publications are listed alphabetically by the last name of the first author and by subject category.

The next generation of tokamak experiments will focus on the role of fusion product (FP) effects. Much understanding of this physics, both theoretical and experimental, has been gained since Kolesnichenko's 1980 review of the subject in *Nuclear Fusion*, Vol. 20, pp. 727–780. This bibliography is the beginning of a sequel to Kolesnichenko's review. The citations have been sorted into the following categories:

I. Single Particle Effects
   A. Orbits and Prompt Loss
   B. Collisions, Heating, and Nonprompt Loss
   C. Toroidal Field Ripple Effects

II. Neoclassical Transport
   A. Fokker-Planck Models
   B. Monte-Carlo and Multigroup Models

III. Collective Processes

IV. Burning Plasmas
   A. Ash Control
   B. Thermal Stability

V. Fusion Product Experiments
   A. Charged FP Measurements
   B. Neutron Measurements
   C. Diagnostics
   D. Simulations with FP Effects

VI. Nuclear Reactions
   A. Fusion Rates, Reactivities, Kinetics
   B. Nuclear Elastic Scattering
   C. Spin-Polarized Fusion

VII. Atomic Processes
   A. Charge Exchange and Ionization
   B. Impurity Effects: Radiation, Scattering

VIII. Alpha Physics Summaries

In Appendix A, citations are listed alphabetically by the last name of the first author. The subject category is noted within square brackets at the end of each citation in Appendix A. In Appendix B, citation numbers are listed for each subject category. Some references address related issues (e.g., neutral beam injection) rather than FP physics per se; these are indicated by an asterisk in the left margin next to the citation number.

Since new citations will be added to this bibliography until the review is completed, additions and comments from the readers are welcomed and encouraged.

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Appendix A

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Appendix B

LIST OF CITATION NUMBERS BY SUBJECT CATEGORY

I. SINGLE PARTICLE EFFECTS

43 46 191 258 433 486

IA. Orbits and Prompt Loss

29 36 38 47 51 150 216 257 354 374 391
392 431 521 601 652 657 678

IB. Collisions, Heating, and Nonprompt Loss

11 48 55 137 225 229 231 259 302 312 342
358 418 430 467 490 497 498 538 549 568 573
633 645

IC. Toroidal Field Ripple Effects

8 9 10 12 45 50 74 165 192 193 194
196 197 208 220 226 247 250 252 254 315 319
325 343 359 446 447 448 545 546 547 557 558
610 611 613 625 651 655 658 662 671 675 676
689

II. NEOCLASSICAL TRANSPORT

IIA. Fokker-Planck Models

30 42 63 76 77 78 85 96 138 195 199
248 266 269 272 339 347 349 351 352 353 355
362 363 382 506 536 674

IIB. Monte-Carlo and Multigroup Models

23 24 207 451 600

III. COLLECTIVE PROCESSES

5 6 16 27 40 41 49 79 87 88 90
91 92 93 94 95 109 110 112 113 114 116
117 119 120 121 122 123 124 125 127 128 130
131 134 141 142 143 149 155 167 169 176 177
183 189 190 201 213 215 224 235 237 289 300
326 327 328 329 344 356 357 365 372 381 384
385 386 387 393 396 403 409 423 426 427 428
429 434 450 461 468 472 473 474 475 494 509
513 514 524 525 556 566 576 577 578 579 580
597 604 605 622 623 634 635 636 637 646 649
650 654 656 659 660 661 663 665 670 680 681
688

IV. BURNING PLASMAS

IVA. Ash Control

14	15	19	61	68	84	86	89	100	144	151
161	174	175	180	182	204	249	265	273	274	275
276	280	288	296	297	298	316	361	404	420	440
456	504	512	517	518	520	526	550	551	560	561
562	582	592	602	603	608	609	615	616	618	619
620	629	630	653							

IVB. Thermal Stability

20	22	64	69	70	71	73	75	178	179	222
246	299	303	314	318	350	375	383	402	408	458
459	460	466	470	485	487	488	489	507	508	523
531	543	552	553	554	555	612	614	638		

V. FUSION PRODUCT EXPERIMENTS

VA. Charged FP Measurements

52	53	54	65	66	98	99	101	102	105	111
135	164	166	219	232	233	234	236	238	242	283
320	321	322	323	324	331	332	398	405	406	410
441	444	449	453	528	529	539	589	590	598	599
606	617	621	677	685						

VB. Neutron Measurements

32	33	34	35	44	107	163	173	244	277	310
311	313	330	399	493	537	591	595	596		

VC. Diagnostics

7	31	80	81	82	83	103	136	139	145	156
157	162	172	186	187	210	211	212	230	239	240
241	245	278	279	281	309	333	340	400	421	422
435	438	439	442	443	454	464	465	471	484	496
499	500	501	502	516	532	533	534	535	540	544
574	575	586	587	588	593	594	631	632	640	666
667	668	672	682	683	684	686	687			

VD. Simulations with FP Effects

1	25	26	62	67	72	106	115	118	129	132
133	154	160	171	181	188	200	255	256	261	262
263	267	268	270	282	317	334	348	376	379	380
407	437	457	477	478	495	510	511	541	548	559
567	569	570	571	584	585	607	626	627	628	642
644	647	664	669							

VI. NUCLEAR REACTIONS

48

VIA. Fusion Rates, Reactivities, Kinetics

4	28	56	57	58	59	104	108	126	140	148
152	158	185	198	203	206	214	217	221	223	227
228	251	253	271	285	286	287	304	305	306	307
308	335	336	337	338	341	360	364	377	378	397
401	411	412	413	414	415	416	417	419	424	432
436	455	462	479	483	503	530	542	572	624	641
643										

VIB. Nuclear Elastic Scattering

17	97	146	168	170	184	202	205	243	373	390
452	469	481	482	648						

VIC. Spin-Polarized Fusion

60	264	284	346	367	368	369	370	371	394	395
425	505	679								

VII. ATOMIC PROCESSES

VIIA. Charge Exchange and Ionization

2	3	37	147	153	218	301	463	491	515	639

VIIB. Impurity Effects: Radiation, Scattering

18	366	519	673

VIII. ALPHA PHYSICS SUMMARIES

13	21	39	159	209	260	290	291	292	293	294
295	345	388	389	445	476	492	522	527	563	564
565	581									

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